

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| In re Application of: | § | Attorney Docket No. AUS920030887US1 |
| RAMAKRISHNAN RAJAMONY | § | |
| | § | |
| Serial No.: 10/734,771 | § | Examiner: NOORISTANY SULAIMAN |
| | § | |
| Filed: 12/12/2003 | § | Art Unit: 2109 |
| | § | |
| For: ESTIMATING BANDWIDTH OF | § | Confirmation No.: 1762 |
| CLIENT-ISP LINK | § | |

APPEAL BRIEF UNDER 37 C.F.R. 41.37

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Sir:

This Appeal Brief is submitted in support of the Appeal of the Examiner's final rejection of Claims 10-16 in the above-identified application.

REAL PARTY IN INTEREST

The real party in interest in the present Appeal is International Business Machines Corporation, the Assignee of the present application.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants, the Appellants' legal representative, or assignee, which directly affect or would be directly affected by or have a bearing on the Board's decision in the pending Appeal.

STATUS OF CLAIMS

Claims 1-20 were originally presented. No claims have been entered, and in Amendment B, filed March 10, 2008, Claims 1-9 and 17-20 were cancelled. Thus, Claims 10-16 are currently pending. The rejection of each of Claims 10-16 is appealed.

STATUS OF AMENDMENTS

Appellants' Amendment B, filed March 10, 2008, was entered by the Examiner. No additional amendments to the claims have been proposed or entered subsequent to the final rejection that led to this appeal.

SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 10 recites a method for providing a service for estimating the obtainable bandwidth of the network connection of a client (see, e.g., Figure 1, client 102; page 4, lines 1-5). According to the method, a service provider (see, e.g., Figure 1, service provider 160; page 11, line 31 through page 12, line 2) receives, from a server (see, e.g., Figure 1, server 150; page 5, lines 1-4), a request for bandwidth estimation of a bandwidth of a connection between the server and the client (see, e.g., Figure 4, block 402; page 12, lines 3-4). The service provider responds to the request for bandwidth estimation by providing the client with a snippet (see, e.g., Figure 3, snippet 300) that is an executable configured to request the server to serve first and second objects, in a chronologically sequential manner, to the client via the connection (see, e.g., Figure 4, block 404; page 12, lines 3-4). The service provider receives, from the snippet at the client, information indicative of time elapsed between delivery of the first and

second objects and estimates the bandwidth of the connection based in part on the elapsed time (see, e.g., Figure 4, blocks 406-410; page 12, lines 4-10).

In addition to the features of Claims 10 and 12, Claim 13 recites that the server responds to the requests for the first and second objects by transmitting the first and second objects to the client from a content distribution network server (see, e.g., Figure 1, CDN server 120; page 5, lines 29-30) that is architecturally proximal to an ISP server to which the client is connected (see, e.g., Figure 1; page 5, line 30 through page 6, line 12).

In addition to the features of Claims 10, 12 and 13, Claim 14 recites that the second object has a size less than or equal to a minimum transmission unit associated with the network, wherein the second object is prevented from fragmentation (see, e.g., page 9, lines 1-17).

In addition to the features of Claims 10 and 12-14, Claim 15 recites that the snippet is invoked multiple times to obtain multiple estimates of the bandwidth and the highest bandwidth estimate is selected (see, e.g., page 9, lines 21-26).

In addition to the features of Claim 10, Claim 16 recites that the snippet includes:

instructions for creating first and second image objects (see, e.g., Figure 3, block 304; page 10, lines 16-26);

instructions for generating a unique identifier (uniqueID) (see, e.g., Figure 3, block 302; page 10, lines 8-15); and

instructions for associating the first and second image objects with the first and second objects on the server using URLs containing the uniqueID (see, e.g., Figure 3, block 306; page 7, lines 25-30, page 11, lines 3-6).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection to be reviewed on appeal are:

I. the final rejection of Claims 10 and 12-13 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent Publication No. 2002/0169880 to *Loguinov* in view of U.S. Patent Publication No. 2001/0010059 to *Burman*;

II. the final rejection of Claims 11 and 14-16 under 35 U.S.C. § 103(a) as unpatentable over *Loguinov* in view of *Burman* in further view of U.S. Patent No. 6,731,600 to *Patel*.

ARGUMENT

I. Claim Rejections under 35 U.S.C. § 103 in view of *Loguinov* and *Burman*

On page 3 of the Final Office Action, Claims 10 and 12-13 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent Publication No. 2002/0169880 to *Loguinov* in view of U.S. Patent Publication No. 2001/0010059 to *Burman*. That rejection is not well founded and should be reversed.

A. Independent Claim 10

Appellant respectfully submits that the combination of *Loguinov* and *Burman* does not render Claim 10 unpatentable under 35 U.S.C. § 103 because that combination does not disclose or render obvious the following feature of Claim 10:

a service provider receiving, from a server, a request for bandwidth estimation of a bandwidth of a connection between the server and the client.

Thus, Claim 10 recites three entities, namely, a server provider, a server and a client.

With respect to the above step of Claim 10, page 3 of the Final Office Action cites paragraph [0010] of *Loguinov* as disclosing “the present invention relates to estimating the real-time bottleneck bandwidth of an end-to-end Internet path between a server and client.” The cited passage thus merely discloses the Internet, a server and a client. Although a client may connect to the Internet via a service provider as noted by the Examiner, the mere disclosure by the combination of *Loguinov* and *Burman* of the coupling of a server and client via the Internet does not disclose or render obvious the claimed “request for bandwidth estimation,” or the receipt of such a bandwidth estimation request originating from a server and directed to a service provider. Appellants therefore respectfully submit that the rejection of Claim 10 and its dependent claims under 35 U.S.C. § 103 in view of the combination of *Loguinov* and *Burman* should be reversed.

The rejection of Claim 10 under 35 U.S.C. § 103 in view of the combination of *Loguinov* and *Burman* should also be reversed because that combination of references does not disclose or render obvious the following step of Claim 10:

the service provider responding to the request for bandwidth estimation by providing the client with a snippet that is an executable configured to request the server to serve first and second objects, in a chronologically sequential manner, to the client via the connection.

With respect to the above step of Claim 10, page 3 of the Final Office Action cites Figures 1 and 5 of *Loguinov*. As described in paragraphs [0005] and [0006] of *Loguinov*, Figure 1 of *Loguinov* discloses “the conventional estimation mechanism known as Receiver-Based Packet Pair (RBPP)” in which “the sender transmits to the receiver two back-to-back packets.” Upon receipt, “the receiver computes the value of the bottleneck bandwidth ... [and] generates a special packet ... with the computed estimate value ... and transmits it back to the sender.” Thus, Figure 1 of *Loguinov* does not disclose a “service provider” or a service provider “responding to the request for bandwidth estimation by providing the client with a snippet ...” as claimed.

Figure 5 of *Loguinov* is described in paragraph [0024] of *Loguinov* as follows:

[0024] Referring to FIG. 4(b), according to an exemplary embodiment of the present invention, the server system 12 transmits data packets containing actual real-time data in bursts in step 200. Here, the packets that the server system 12 has to deliver to the client system 14 are transmitted at a maximum transmission speed of the adjacent link to guarantee the condition that the packets traveling along the end-to-end Internet path are queued and delayed at the bottleneck link. That is, the packets of each burst have to leave the server system 12 at a rate that is definitely higher than the bottleneck link's speed, so that the packets in each burst can be expanded before they arrive to the client system 14, as shown in FIG. 5. It is be noted that although the server system 12 uses packets of a different size in FIG. 5, the server system 12 may send packets of equal size in the embodiment of the present invention.

As is apparent from the foregoing description, Figure 5 of *Loguinov* does not disclose a “service provider” or a service provider “responding to the request for bandwidth estimation by providing the client with a snippet ...” as claimed. Because the combination of *Loguinov* and *Burman* does not disclose the claimed step of a “service provider responding to the request for bandwidth

estimation ...,” Appellants respectfully submit that the rejection of Claim 10 and its dependent claims under 35 U.S.C. § 103 should be reversed.

C. Dependent Claim 13

The rejection of dependent Claim 13 under 35 U.S.C. § 103 in view of *Loguinov* and *Burman* should also be reversed because the cited combination of references does not disclose or render obvious:

the server responds to the requests for the first and second objects by transmitting the first and second objects to the client from a content distribution network server that is architecturally proximal to an ISP server to which the client is connected.

In the rejection of Claim 13 set forth at page 5 of the Final Office Action, the Examiner merely cites the use of the term “ISP (Internet Service Provider)” in paragraph [0072] of *Burman* and the use of the term “Internet” by *Loguinov*. These citations do not disclose or render obvious the claimed “content distribution network server” of Claim 13, and in particular, do not disclose the transmission of objects by a content distribution network server “that is architecturally proximal to an ISP server to which the client is connected.” (The architectural proximity of the CDN server contributes to the reliability of the bandwidth estimation, as described, for example, at page 5, line 22 *et seq.* of the specification.) Accordingly, the rejection of Claim 13 and its dependent claims under 35 U.S.C. § 103 in view of the combination of *Loguinov* and *Burman* is not well founded and should be reversed.

II. Claim Rejections under 35 U.S.C. § 103 in view of *Loguinov*, *Burman* and *Patel*

At page 5 of the Final Office Action, Claims 11 and 14-16 are rejected under 35 U.S.C. § 103(a) as unpatentable over *Loguinov* in view of *Burman* in further view of U.S. Patent No. 6,731,600 to *Patel*. That rejection is also not well founded and should be reversed.

A. Arguments made with respect to Claim 10 apply to its dependent claims

Because the additional citation to *Patel* does not address any of the deficiencies in the rejection of underlying independent Claim 10 or Claim 13 in view of the combination of *Loguinov* and *Burman*, the arguments set forth above with reference to Claim 10 also

demonstrate that the rejection of Claims 11 and 14-16 should be reversed. In addition, the arguments set forth above with reference to Claim 13 demonstrate that the rejections of its dependent Claims 14-15 should be reversed.

B. Dependent Claim 14

The rejection of exemplary dependent Claim 14 under 35 U.S.C. § 103 in view of *Loguinov*, *Burman* and *Patel* should also be reversed because the cited combination of references does not disclose or render obvious:

... the second object has a size less than or equal to a minimum transmission unit associated with the network, wherein the second object is prevented from fragmentation.

In the rejection set forth at page 6 of the Final Office Action, the Examiner cites col. 11, lines 47-49 of *Patel* as disclosing the features of Claim 14. In its larger context including lines 42-52, the cited passage teaches:

In one embodiment of the invention, the client computer 112 attempts to compensate for the impreciseness of the system clock by adding a second correction factor to the time that was calculated above in the state 412. In this embodiment, if the size of the second data packet is less than or equal to 500 bytes, the client computer 112 assigns the second correction factor to be equal to 60 milliseconds. Alternatively, if the size of the second data packet is greater than 500 bytes, the client computer 112 assigns the second correction factor equal to be equal to 40 milliseconds.

The cited passage of *Patel*, when taken in combination with *Loguinov* and *Burman* does not disclose the transmission of “a second object having a size less than a minimum transmission unit” or preventing fragmentation of the second object as claimed. Instead, the combination of references discloses the selection of a correction factor in its calculation of current bandwidth based upon packet size. No restriction as to the size of a transmitted packet is made. Appellants therefore respectfully submit that the rejection of Claim 14 under 35 U.S.C. § 103 is not well founded and should be reversed.

C. Dependent Claim 15

The rejection of exemplary dependent Claim 15 under 35 U.S.C. § 103 in view of *Loguinov*, *Burman* and *Patel* should also be reversed because the cited combination of references does not disclose or render obvious:

invoking the snippet multiple times to obtain multiple estimates of the bandwidth and selecting the highest bandwidth estimate.

In the rejection set forth at page 9 of the Final Office Action, the Examiner cites lines 10-13 of *Patel's* Abstract, col. 9, lines 60-61 of *Patel* and Figures 5-6 of *Loguinov* as disclosing the features of Claim 15. Taking the citations to *Patel* first, *Patel's* Abstract discloses, "The transmission bandwidth detector uses identified back-to-back data packets to determine the transmission bandwidth between the server computer and the client computer." The additional citation to col. 9, lines 60-61 adds nothing to this, but merely states, "FIG. 4 is a flowchart illustrating a method for estimating the available bandwidth" Neither citation to *Patel* (or the reference generally) when taken in combination with the other cited references discloses or renders obvious "invoking the snippet multiple times to obtain multiple estimates of the bandwidth and selecting the highest bandwidth estimate," as claimed.

Similarly, Figures 5-6 of *Loguinov* respectively disclose "a particular mechanism of estimating the bandwidth of the packets of the burst" (*Loguinov*, paragraph [0017]) and "a particular mechanism of handling the packet compression event" (*Loguinov*, paragraph [0018]), but fail to disclose "invoking the snippet multiple times to obtain multiple estimates of the bandwidth and selecting the highest bandwidth estimate," as claimed. Consequently, Appellants respectfully submit that the rejection of Claim 15 under 35 U.S.C. § 103 is not well founded and should be reversed.

D. Dependent Claim 16

The rejection of dependent Claim 16 under 35 U.S.C. § 103 in view of *Loguinov*, *Burman* and *Patel* should also be reversed because the cited combination of references does not disclose or render obvious:

wherein the snippet includes:

- instructions for creating first and second image objects;
- instructions for generating a unique identifier (uniqueID); and
- instructions for associating the first and second image objects with the first and second objects on the server using URLs containing the uniqueID.

In the rejection set forth at page 7 of the Final Office Action, the Examiner cites *Patel's* disclosure of video, text, graphic and other types of data objects as disclosing “instructions for creating first and second image objects.” However, the mere disclosure of conventional data objects by *Patel*, when taken in combination with the other references of record, does not disclose or render obvious a server-supplied snippet that creates first and second image objects as claimed.

Page 7 of the Final Office Action further cites *Burman's* disclosure of conventional URLs in paragraph [0008] as disclosing the claimed “instructions for associating the first and second image objects with the first and second objects on the server.” However, the conventional URLs disclosed by *Burman* do not associate image objects created by a snippet with corresponding objects on a server, but instead merely serve as a proxy for a network address of an object. Because the combination of *Loguinov*, *Patel* and *Burman* does not disclose “instructions for creating first and second image objects” or “instructions for associating the first and second image objects with the first and second objects on the server” as claimed, Appellants respectfully submit that the rejection of Claim 16 under 35 U.S.C. § 103 should be reversed.

III. Conclusion

The foregoing remarks demonstrate that the combination of cited references does not teach or suggest each feature of each pending claim as required to support a rejection under 35 U.S.C. § 103. Appellants therefore respectfully request the Board to reverse the rejection of each pending claim.

Appellants have submitted herewith the fees for a one-month extension of time and the submission of an Appeal Brief. Please charge any other fee necessary to further the prosecution of this application to **IBM Corporation Deposit Account No. 09-0447**.

Respectfully submitted,

A handwritten signature in cursive script, reading "Brian F. Russell", is written over a horizontal line.

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CLAIMS APPENDIX

1. – 9. (canceled)

10. A method for providing a service for estimating the obtainable bandwidth of a client's network connection, said method comprising:

a service provider receiving, from a server, a request for bandwidth estimation of a bandwidth of a connection between the server and the client;

the service provider responding to the request for bandwidth estimation by providing the client with a snippet that is an executable configured to request the server to serve first and second objects, in a chronologically sequential manner, to the client via the connection;

the service provider receiving, from the snippet at the client, information indicative of time elapsed between delivery of the first and second objects; and

estimating the bandwidth of the connection based in part on the elapsed time.

11. The method of claim 10, further comprising, maintaining response time data for the server and alerting the server based the server response time for a selected client and the estimated bandwidth associated with the selected client.

12. The method of claim 10, wherein the snippet identifies the first and second objects with URLs that are unique on the network connecting the client and the server.

13. The method of claim 12, wherein the server responds to the requests for the first and second objects by transmitting the first and second objects to the client from a content distribution network server that is architecturally proximal to an ISP server to which the client is connected.

14. The method of claim 13, where the second object has a size less than or equal to a minimum transmission unit associated with the network, wherein the second object is prevented from fragmentation.

15. The method of claim 14, further comprising invoking the snippet multiple times to obtain multiple estimates of the bandwidth and selecting the highest bandwidth estimate.

16. The method of claim 10, wherein the snippet includes:
instructions for creating first and second image objects;
instructions for generating a unique identifier (uniqueID); and
instructions for associating the first and second image objects with the first and second objects on the server using URLs containing the uniqueID.

17. – 20. (canceled)

EVIDENCE APPENDIX

none

RELATED PROCEEDINGS APPENDIX

none